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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,585	04/09/2004	Aamod Khandekar	030304	1901

23696 7590 09/19/2006

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EXAMINER
MALEK, LEILA

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/821,585	KHANDEKAR ET AL.	
	Examiner	Art Unit	
	Leila Malek	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-9,11-13,15-18,20,21,25,27 and 31* is/are rejected.

7)☒ Claim(s) *4,10,14,19,22-24,26,28-30, and 32-34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/04/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/04/2005, has been considered and made of record by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-3, 5-9, 11-13, 15-18, 20, 21, 25, 27, and 31 rejected under 35 U.S.C. 102(a) as being anticipated by Bjerke et al. (hereafter, referred as Bjerke) (US 2003/0103584).

As to claims 1, 12, and 16, Bjerke discloses a method/apparatus for performing data detection in a wireless communication system (see paragraph 0001), comprising; deriving log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission (see paragraphs 0028, 0158, Figs. 1 and 4c); estimating interference due to the first data stream (see block 460a); and deriving LLRs for code bits of a second data stream based on the LLRs for the code bits of the

first data stream and the estimated interference (see block 452b).

As to claims 2, 13, and 17, Bjerke discloses decoding the LLRs for the code bits of the first data stream to obtain decoded data for the first data stream (see paragraph 0158); and re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream (see Fig. 1, blocks 180 and 182), wherein the interference due to the first data stream is estimated based on the remodulated symbols (see paragraph 0161).

As to claims 3 and 18, Bjerke shows that the LLRs for the code bits of the first data stream are derived from the received symbols in real-time without buffering the received symbols (Figs. 1 and 4c).

As to claim 5 Bjerke discloses that the quadrature phase shift keying (QPSK) is used for both the first and second data streams (see paragraphs 0009 and 0036).

As to claim 6, Bjerke discloses that a modulation scheme with a higher order than quadrature phase shift keying (QPSK) is used for the first data stream (see paragraph 0009), wherein the method further comprising: deriving received symbol estimates based on the LLRs for the code bits of the first data stream, and wherein the LLRs for the code bits of the second data stream are derived based on the received symbol estimates and the estimated interference (see paragraph 0161 and Fig. 4c).

As to claim 7, Bjerke discloses that deriving received symbol estimates includes forming two equations for each received symbol based on LLRs for all code bits of a data symbol carried in the received symbol for the first data stream, and wherein a received symbol estimate for the received symbol is derived from the two equations

(see paragraphs 0105-0133).

As to claim 8, Bjerke discloses that the LLRs for the code bits of the first and second data streams are derived based on a dual-max approximation (see paragraphs 0010 and 0137).

As to claims 9 and 15, Bjerke further discloses deriving channel gain estimates for a wireless channel used for the data transmission, wherein the LLRs for the code bits of the first and second data streams and the interference due to the first data stream are derived with the channel gain estimates (see paragraphs 0089-0096).

As to claim 11, Bjerke discloses that the wireless communication system utilizes orthogonal frequency division multiplexing (OFDM), and wherein the received symbols are from a plurality of sub-bands (see paragraph 0004).

As to claims 20, 27, and 31, Bjerke discloses a method/apparatus for performing data detection in a wireless communication system (see paragraph 0001), comprising; deriving log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission (see paragraphs 0028, 0158, Figs 1 and 4c); deriving data symbol estimates for the first data stream based on either the received symbols or the LLRs for the code bits of the first data stream (see paragraphs 0161 and 0166); estimating interference due to the first data stream based on the data symbol estimates (see block 460a); and deriving LLRs for code bits of a second data stream based on the received symbols and the estimated interference (see block 452b).

As to claim 21, Bjerke discloses that the data symbol estimates are derived by

making hard decisions on either the received symbols or the LLRs for the code bits of the first data stream (see paragraph 0161).

As to claim 25, Bjerke shows that the LLRs for the code bits of the first data stream are derived from the received symbols in real-time without buffering the received symbols (Figs. 1 and 4c).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leila Malek whose telephone number is 571-272-8731. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leila Malek
Examiner
Art Unit 2611

L.M

M. Ghayoufi

MOHAMMED GHAYOUFI
SUPERVISORY PATENT EXAMINER